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Criticized is a paper by Johnson, Wyer, and Gilbert, "Quality education and integration: an exploratory study", ("Phylon" XXVIII, 1967, pp. 221-229). This study stated that (1) there may be more racial conflict in integrated schools and therefore educational quality may be lower than in less integrated schools, and (2) social class orientation of the schools is also an independent variable related to effective student-teacher relationships. The study is attacked on methodological as well as theoretical grounds. It is stated that "their hypotheses appear a shambles of questionable assumptions." (NH)

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JOHNSON et al ON QUALITY EDUCATION: A CRITIQUE*

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The problem of substantiation of claims about quality education for all Americans has occupied a multitude of authors for some time. The merit of their attempts to ascertain the truth concerning such issues as the bearing of integration, status, class, etc. on a dependent variable such as social adjustment or academic achievement varies widely. We do well to bear in mind the injunction of the great Italian social scientist, Pareto:

> In a country where almost all the men are blond-haired, the majority of criminals will consist of blond men. But from that fact, one is unable to draw a conclusion as to a relationship between the color of the hair and criminality.[1]

In an area of such ambiguity as the social studies, and especially in that emotion-laden subdivision of race relations, we cannot be too cautious about the quality of our research. This is not to suggest that

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* We would like to thank Mr. Alex Ajay, who drew our attention to "Quality Education and Integration" when it was first presented, virtually the same, by Johnson in the summer of 1966 in Washington, D.C. Although Mr. Ajay severely criticised the Study then, and we have followed his criticism in some points (particularly the statistical) of our critique, he is not at all responsible for any errors in its present form.

[1] V. Pareto, Les Systemes Socialistes, Vol. II, (1903), p. 145.

we should be in the least reticent about documentation of hypotheses, for factual evidence is sorely needed. Rather it is to suggest that we must be even more critical than usual of studies in this area, both our own research and that of others.

"The Study"

Two focal points are drawn in the following criticism of the study contributed by Johnson et al:[2] (1) the research methods employed and, (2) the ostensible validity of the hypotheses which were advanced. Due to the apparent lack of rigorous application of statistical and experimental methods it may well be that Johnson et al did not intend to imply the existence of any such procedure. However, "the Study" does contain some words, e.g., curvilinear relationship, which might tempt the unwary consumer to expect a degree of universality in the results, which is not justified. This possibility somewhat bolsters an apology for adding to the discouraging plethora of technical discussions found in literature. We are aware of and in sympathy with the rising concensus that there are too many approaches and too few results in educational research. In this vein, the authors trust that the reader too will find the second focal point of most interest.

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[2] Johnson, Wyer, and Gilbert, "Quality Education and Integration: An Exploratory Study", Phylon XXVIII (1967), 221-229. We refer to this as "the Study" throughout. All bracketed page numbers in the text apply to "the Study."

In "the Study", Johnson et al have forwarded the theses that (a) the degree of racial conflict in integrated schools may be greater, and therefore the quality of education lower than in less integrated schools, and (b) in schools where the social class orientation militates against effective student-teacher relationships, the quality of education may be poorer than in schools where the social class orientation is facilitating. (p. 222)

These two hypotheses suggest that racial conflict and social class orientation are being proposed as independent variables, and are suggested as having some relationship to the dependent variable, college grade point average. (p. 223, note 3) The authors propose that

> " this paper is a preliminary attempt to analyze the validity of these arguments". (p. 222)

The words "preliminary" and "exploratory" apparently assume great importance in "the Study". Fortunately, one can ask "How much weight can they bear?"

Before examining the "analysis" of Johnson et al, it may be of interest to examine their major assumption, namely that "the quality of education that students receive in high school is undoubtedly influenced by the quality of instruction" (p. 221). Generally, the literature does not support this supposition, i.e. consistent or systematic relationships between quality of instruction and quality of education have

not been demonstrated. For example, forty years of literature abounds in studies which have failed to demonstrate systematic relationships between teacher ratings, i.e. quality of instruction, and student performance or quality of education. [3]

One other preliminary point: Johnson et al mentions that it is a "typical assumption that the quality of education is related negatively to the percentage of Negroes attending the school" (p. 223). We might remark that to make this assumption would be to commit just the error Pareto warned against. [4]

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[3] D. M. Medley and H. E. Mitzel "Some Behavioral Correlates of Teacher Effectiveness," Journal Educational Psychology Vol. L (1950); also A. S. Barr et al, "Wisconsin Studies of the Measurement and Prediction of Teacher Effectiveness," Journal Experimental Education Vol. XXX (1961), 5 ff.

[4] "The proportion white in a school was positively related to individual performance. This effect appeared to be less than, and largely accounted for by, other characteristics of the student body than the racial composition of the school per se." Coleman, op. cit. pp. 307, 330-331. cf. also R. E. Herriott & N. H. St. John, Social Class and the Urban School (1966), chs. 2 & 10.

The Literature

A synopsis of the literature[5] would seem to indicate that (a) the school, as an institution, has little effect on the students' performance, when compared with the effect his out-of-school environment has on his performance,[6] (b) one of the major <u>academic</u> (as well as social) benefits of the school is derived from heterogeneity of student body, i.e., the

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5 cf. The bibliography prepared by H. A. Aurbach, "Selected Bibliography on Socio-Culturally Disadvantaged Children and Youth," University of Pittsburgh: LRDC (1966), esp. 23-26, the legal literature cited in <u>Hobson</u> v. <u>Hansen</u>, <u>Federal Supplement</u>, Vol. CCLXIX (1967), 201-519, esp. 493 ff, and L. Fischer and D. G. Lahr "Social Policy and Education" <u>Rev. Ed. Research</u> Vol. XXXVII (1967) 34-39.

6 U.S. Commission on Civil Rights, <u>Racial Isolation in the Public Schools</u> (1967) Vol. I. pp. 81-82; Vol. II, p. 40 and Tables cited. Coleman <u>et al</u> have found a negative relationship between socioeconomic status and performance. This seems to be in keeping with the literature. <u>op. cit</u>. 309-310.

"interaction effect" of student on student,[7] and (c) to the extent that variance in performance can be related to variance in the school (as distinct from environmental causes), the significant variance is between classrooms (i.e. intraschool). This is reflected in the debilitating effects of "homogeneous" grouping, track systems, etc.[8] (Thus (b) is a corollary of (c).)

The preservation of some measure of openness both intraschool, by abolishing "homogeneous" grouping and inflexible tracking (if not tracking per se), and interschool, where the intraschool variance is negligable is of great importance. Negligible intraschool variance is generally the case. Heterogeneity, not homogeneity must be the means to achieving quality education.

In light of this, it is important to see if Johnson et al can raise evidence against the general arguments posed in the literature.

[7] Cf. McLaurin v. Oklahoma State Regents, United States Supreme Court Reports, (1950) p. 641

[8] On "tracking, " see Hobson v. Hansen, op. cit., pp. 442-492. Homogeneous grouping is assignment as a function of ability; "homogeneous" is as a function of race. On intra- and inter-school variance, see also Coleman, op. cit., p. 297.

The Sample

We might wonder why only 19 of the 40 to 50[9] public high schools in Chicago are represented in "the Study" and what happened to the students from the omitted schools. We might also wonder how representative is a sample showing only 4 percent of the Negro students above the probationary threshold. Our doubts, based on intuition, can be substantiated.

An estimate of the variance of the author's data, based on the external variance of the 19 and 15 samples,[10] gives us

$$\sigma_n = 0.88 \text{ grade points}$$
$$\sigma_w = 1.70 \text{ grade points}$$

The range encompassing all 15 means of the sample of white students is 0.70 grade points, the similar range for the Negro students is 0.71 grade points.[11] A chi-square test of significance indicates the probability of the Negro sample deviating from a normal distribution is greater than 98.5%; the probability of the white sample deviating is greater than 99%.

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[9] The total number depends on how one classifies. Cf. R.J. Havighurst, Public Schools of Chicago (1964) pp. 203ff.

[10] On estimation of variance, cf. E.S. Pearson and H.O. Hartley, Biometrika Tables for Statisticians, Vol. I (1966), pp. 37-38.

[11] That is, 100% of the observations fall within 2.39-3.79 and 1.77-3.19 grade points, respectively. Expected values on a chi-square test are 5 white and 11 Negro values.

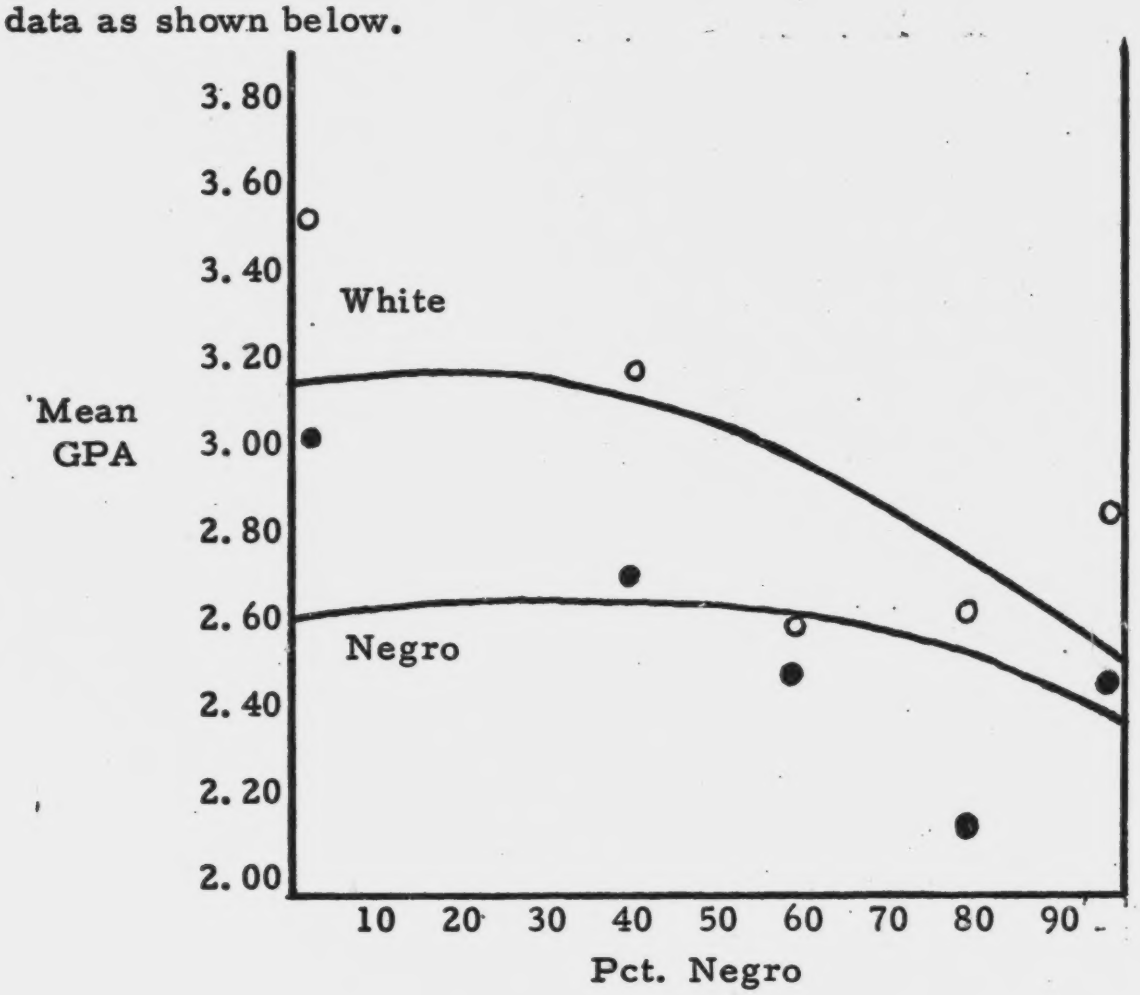
We can then reach one of two conclusions: first, we can conclude, with an exceedingly high degree of confidence, that there were systematic biases in the selection of the subjects. If this is the case, no generalizations whatever can be made from the data. Hence, "the Study" is of no relevance in attempting to refute the statements in the literature, and hardly "preliminary." On the other hand we can conclude that Johnson et al were not studying students at all, but rather high schools. If this is the case, then the use of mean GPA is quite misleading. An index of the quality of education per high school is required, and the GPA of an assortment of students from a high school, ranging from one to one hundred and one students, simply won't suffice.

The Hypothesis of Curvilinearity

Johnson et al have indicated that a "curvilinear relationship" exists "between the percentage of Negroes in the high schools and the college grade of students" (p. 224) To indicate the arbitrariness of Johnson's assumption that there is a significant concave curvilinear relationship between racial balance and performance (i.e. the greater the segregation, the higher the performance), we will demonstrate that the opposite argument can also be asserted, on the authors' own evidence.

Let us hypothesize that the relationship between racial balance and performance is convexly curvilinear, i.e. the dependent variable

has its greatest value where the greatest racial balance is present. Given the data in Table I of "the Study" (p. 222), we fit two curves to the data as shown below.



White: $X^2 = 0.123$: accept H^o $P > 0.995$

Negro: $X^2 = 0.139$: accept H^o $P > 0.995$

For the white students, there was no significant difference between the curve and the data, at a high level of confidence. The same was found for the Negro students. These findings indicate that practically any hypothesis asserting curvilinearity, with the curve flexed in either an upward or downward direction, can be supported by the data. Thus to choose any particular hypothesis as representing the "findings," is manifestly bad practice.

The Arguments of "the Study"

In light of this, it is perhaps not necessary to go further. With no data and hence no significance, little remains of "the Study" except some questionable political recommendations. However, we can examine the internal structure of the "arguments" Johnson et al forward. We must compare them to the literature, as there is no data in "the Study" to relate to them.

On closer analysis, we see that racial conflict and class orientation are not dependent variables at all! In fact, for Johnson et al, racial integration per se is the only variable, hence must the independent variable. It is merely assumed by the authors that racial integration is concommitant to racial conflict. With regard to the data presented in "the Study" (again, assuming contrary to fact, that it is meaningful), the only argument that could be made is that integration has a debilitating effect upon academic performance.

Johnson et al state:

> "Students probably experience considerable conflict in many schools undergoing transition. This conflict may be manifested in the relationship of students with one another...the degree of racial conflict in integrated schools may be greater, and therefore the quality of education may be poorer than in schools that are either predominantly Negro or predominantly white (p. 222).

We could symbolically express this hypothesis (overlooking the modality of "may", with I as integration, C as conflict, and E as quality of education) as

$$(+I \longrightarrow +C) \longrightarrow (+I \longrightarrow -E)$$

Thus we see that integration (I) is in fact the independent variable, rather than racial conflict. Thus we see that one of the "two factors which seem particularly important" (p. 221) is not important enough to be an independent variable!

We find that the best description provided in the literature of the actual state of affairs is symbolized by

$$+I \longrightarrow +E$$

This is supported by the available evidence, and holds irrespective of the relationship between integration and social tension.[12] Johnson et al have merely suggested a false hypothesis, supposing an inverse rather than direct relationship to exist between integration, decreased racial tension, and quality education. And, of course, with no data, Johnson et al had no means of testing the hypothesis independent of the literature.

The Orientation-Performance Hypothesis

Furthermore, it is impossible to ascertain whether the ascription of social class orientation was in fact an independent variable (i.e. that there was a measurement of this variable logically prior to that of the

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12 Cf. note 6 above. As long ago as 1948, E.S. Bogardus showed, in small-group experiments, that integration decreased racial tension. Cf. his "Reducing Racial Tension," Sociology and Social Research, Vol. XXXV (1950), 50 ff. and literature cited there.

dependent variable).[13] If this measurement was prior, no indication of the significance of this variable can be ascertained, in its relation to college grade point average.

As a matter of philosophy or practice, when one fails to demonstrate an anticipated linear relationship in a sample of data, it would seem more sound to question the sampling procedures involved rather than the "true" nature of the phenomenon under investigation by introducing another theory ad hoc. That is, in view of the rather large number of previous investigations which have demonstrated a negative linear relationship, it seems rather presumptious to ascribe the deviant results of one investigation to the phenomena, rather than to a faulty method.

Further, we have seen that the claim of curvilinearity cannot be substantiated with respect to Johnson's data; particularly the

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13 It is doubtful: the authors report (p. 227, note 5: the asterisk in Figure 1, P. 223, refers to this note, not footnote 3) that the unclassified school "probably has a middle-class orientation" (italics ours). Either their taxonomy violates the necessary condition of completeness, or else was constructed ad hoc to explain away variance. Neither is legitimate. Consider also "...as an isolated category the concept of class is meaningless even for purely descriptive purposes. ..."class" is not merely a defined term but a category imbedded in a theory. Concept and theory of class are inseparably connected." R. Dahrendorf Class and Class Conflict in Industrial Society (1959) p. 152. The assumption that "social class orientation" is meaningful in this theory-free context is clearly at discord here.

apparent absence of a linear relationship does not establish that there is a systematic curvilinear relationship between integration and performance. With reference to Fig. 1 (p. 223), Groups (or "Settings") C & D do not appear to show any systematic relationship between independent and dependent variables. On the other hand, groups A & B visually appear to demonstrate the anticipated linear (negative) relationship. Visual inspection of Fig. 2 (p. 224) does not appear to be anything other than a negative linear relationship. In any event visual inspection is not the best means available to confirm or to deny the existence of systematic relationships, especially where data have been grouped, but is generally recognized as a heuristic approach for the trained statistician to ascertain the need for further (non-intuitive) tests. In very elementary lectures in introductory statistics, students are enlightened to the fallacies encountered or perpetrated with grouped (arbitrarily or not) data. To be more precise, a trained statistician would hardly artificially decrease the range of one of the correlates (i.e. GPA) when attempting to demonstrate either a linear or curvilinear relationship.

In relation to the quantification of the independent variable, if the dependent variable is social class orientation, then the metric of social class orientation should appear on the abscissa, not percentage of Negro enrollment. If the percentage of Negro enrollment

and the index of social class orientation are so well correlated as to allow the type of substitution proposed by the authors, then it should be demonstrated. Johnson, et al, have simply failed to show on what basis (if any) they have quantified social class orientation.

A problem related to the dependent variable (grade point average) is again the problem of restricted range. One might anticipate that any linear curve representing grade point average might tend to curve (appear asymptotic) due to the fact that few grade point averages approach either extreme of the continuum. In this case a change in slope of the curve at either extreme can hardly be attributed to the other variable (social orientation).[14] In the absence of measures of variance within groups, however, it is not even possible to know what the extremes would be.

This fairly well concludes our analysis of Johnson et al as a serious contribution to the literature on integration and education. We have demonstrated that sample defects and lack of statistical significance reduce their data to nil. Their hypotheses appear a shambles of questionable assumptions. In conclusion we would like to pose some problems which we hope can be treated in the near future. Perhaps we could label these our "Suggestions for Action."

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[14] Cf. F. Y. Edgeworth, cited in Pareto, Ecrits sur la courbe de la repartition de la richesse (1965), p. xvii. If a curve "relates to averages it is not to be expected that it should be verified at the higher extremity where only one or two observations occur."

Conclusion: Needed Research

Questions which can be posed here are perhaps more far reaching than Johnson et al would care to address themselves to. The findings of substantial studies of the Chicago public schools indicate that the usual negatively sloped relationship, pairing predominantly white schools with higher academic performance of students, and predominantly non-white schools with lower performance, exists there, as it does throughout the Northeast United States.[15]

Both the University of Illinois and the Chicago public school system are,to some extent, state-supported institutions. As both are at least partially maintained by the State of Illinois, an interesting legal possibility arises. In the face of differential interschool allocation of elementary and secondary school resources, where the school has been accredited by the appropriate State Agency, would the State institution of higher learning be obliged to establish corresponding differential entrance requirements, probationary thresholds, etc.?

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[15] Cf. J. Burkhead et al, Input and Output in Large-City High Schools (1967), Ch. III "Chicago Public High Schools, " esp. Table I, p.47) showing a negative correlation of 0.79 between percentage non-white and median family income, and Table III (p.51), showing a negative correlation of 0.69 between median family income and school dropout, and Tables IV and V (pp. 52-53), where a positive correlation of 0.90 and 0.91 is found between 11th grade I.Q., and 11th grade Davis Reading Test scores, and median family income, respectively.

This would seem only just: it appears rather vicious to suppose that there is something good about being a Negro student from a predominently Negro high school, when this indicates one is in the greatest danger of academic failure as a result. This can be illustrated by the data of "the Study". A 2 by 2 table for variables "student's race" and "racial composition of school" gives us

		Student's Race N	Student's Race W
School Composition	N	2.45	2.78
	W	2.75	3.40

This indicates (if the data mean <u>anything</u> at all) that the white student from a predominantly white high school will perform almost one grade point above the Negro student from the predominantly Negro high school. Although mentioned in passing in "the Study" (pp. 223-224), this was apparently overlooked when it is proposed that "the integration issue aside, Negro students would receive a better academic education" (p. 228). Of course, we cannot generalize from the data, so we properly confine our remarks to the plight of the Negro students reported by Johnson <u>et al</u>.

A proposition was recently forwarded that "a university must be held accountable for the quality of education in the school system in its geographic home".[16] In view of this, assuming equal per pupil

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[16] <u>Urban Education</u>, Vol. III (1967), No. 1, p. 6.

expenditures, which incidentally would appear to be the case for Chicago,[17] is the institution of higher learning obliged to provide preferential accomodation (as above), if the public elementary and secondary schools have not made the differential allocation of resources (such as busing) which would permit equality of educational opportunity?

The stipulation that "The school must not lose sight of its function and must not compromise its obligation to strive for maximum educational development for all children in the community"[18] is interesting. If true, one wonders whether the school board and the school administrators are legally responsible for the miseducation of Negro children in what Elias Blake has called "criminally neglected schools," in any sense of responsibility other than that of Carl Hansen, (ex) Superintendent of Schools in the District of Columbia?[19]

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17 As reported in Burkhead, op.cit., Table X, p.57, where expenditures are given as $477 per pupil for low, and $459 per pupil for high median family income. The coefficient of variation was 15%.

18 Urban Education, op.cit., p.7.

19 As found in Hobson v.Hansen, op.cit., pp.418-419. With O.M. Fiss, "Racial Imbalance in the Public Schools," Harvard Law Review, Vol. 78 (1965), 584, we are suggesting the label de facto (or residential) segregation is a poor shield for school authorities to avoid their responsibilities. Blake is cited from the Harvard Educational Review, Vol. 37 (1967), p. 473.

Have all the means to integration been sincerely tested? We wonder if Johnson et al are naive enough to think "the current integration policy of transporting Negroes to white schools" (p. 227) constitutes a comprehensive busing plan. As a matter of simple logic, one doubts this. With the exception of radical discrepancies in pupil per classroom distribution,[20] the movement of large number of students in one direction alone is impossible. Referring to "large-scale busing," Fiss remarks that "Such a plan would require transportation for both white and Negro children."[21] We also wonder if Johnson et al, in suggesting "the white exodus...adds further complications to the issue of racial integration" (p. 228), might not be overlooking that

> "There are many methods of pursuing the goal of integration... (the) possibility of massive withdrawal, which varies with the intensity of the whites' resentment, may be affected by the costs of private schools and by the ties of family may have with the city. Although (busing) is within the spectrum of those capable of correcting the imbalance, it should not obscure the fact that less extreme remedies exist and that in most communities they would not only alleviate the imbalance, but eliminate it as well."[22]

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[20] As is the case in Washington; cf. Hobson v. Hansen, op. cit. pp. 433-434; not so, apparently for Chicago: cf. Burkhead, op.cit., p. 58, Table X.

[21] O.M. Fiss, op. cit. p. 573.

[22] Fiss, op. cit. p. 573-574. This would seem to relate to Joseph Alsop's comments as well. Cf. his "No More Nonsense about Ghetto Education!" New Republic, 22 July 1967, pp. 18 ff.

Answers to questions such as these would seem to be the product of true exploratory studies. After all, by the best indicators we have, it appears to be the case that to upgrade school facilities and programs, to increase the number of teachers and decrease class size, etc., while perhaps improving the "quality of instruction" would have little if any appeciable bearing on academic performance.[23] What it means to undertake "exploratory" or "preliminary" studies, in an apparent ignorance of the (really) voluminous literature, it not at all clear. Given the recommendations for action of Johnson et al, it does not appear to be the case that "Negro students would receive a better academic education" (p. 228). They will continue to go to college to play basketball and flunk out. In conclusion, we call for a little more vision, a little more scope, and a lot better research.

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[23] Coleman, op. cit., pp. 22-23; 293-302. Also Burkhead, op. cit., p. 56: "He who would explain variations of Chicago public high schools has a great deal to interpret...socioeconomic variables are of the greatest importance in determining differences in school outputs. The out-of-school variables are far more significant than the in-school variables."